

Claims

1. A printing unit for a web-offset press comprising plate and blanket cylinders arranged in couples to print on both sides of a paper web passing between them,
5 and an inking system associated with each print couple operable to supply ink to the plate cylinder thereof in an operative position, wherein the printing unit comprises a primary module carrying the plate and blanket cylinders and a pair of secondary modules carrying the inking systems, at least one of the secondary modules being movable into a non-operative position in which the primary and the or each
10 secondary module are separated from each other.
2. A printing unit according to claim 1, wherein the primary module is disposed between the pair of secondary modules.
- 15 3. A printing unit according to claim 1 or claim 2, wherein the or each secondary module is slideable in a lateral direction away from the primary module to separate the printing unit into said primary and secondary modules.
- 20 4. A printing unit according to claim 3, wherein each of the secondary modules are slideable laterally away from the primary module in opposite directions.
5. A printing unit according to claim 3 or claim 4, wherein the secondary modules are slideably mounted on a supporting base.
- 25 6. A printing unit according to claim 5, wherein a slide unit is attached to each of the secondary modules for cooperation with a guide track on the supporting base.
- 30 7. A printing unit according to claim 6, wherein the slide unit includes pre-loaded roller bearings that cooperate with a recess on the guide track.

8. A printing unit according to claim 6 or 7, wherein the secondary modules include a carriage to which they are immovably attached, the slide units being mounted on the carriage.

5 9. A printing unit according to any of claims 6 to 8, including means for driving said carriage along the track.

10 10. A printing unit according to claim 9, wherein the drive means includes a motor drivingly connected to a ball screw mounted to the supporting base and a connecting member on the ball screw attached to the secondary module such that the secondary module slides on the supporting base in response to rotation of the ball screw by the motor.

15 11. A printing unit according to claim 10, wherein the motor is connected to the ball screw via a pair of pulleys and a drive belt.

12. A printing unit according to any preceding claim, including means for moving the primary module out from between the secondary modules when the secondary modules have moved into a non-operative position.

20 13. A printing unit according to claim 12, wherein the means for moving the primary module moves the primary module in a lateral direction substantially at right angles to the lateral direction of movement of the secondary modules between their operative and non-operative positions.

25 14. A printing unit according to claim 12 or claim 13, including means for replacing the primary module with another primary module stored remote from the secondary modules so that the secondary modules can be moved back into their operative positions with said other primary module.

30 15. A printing unit according to claim 14, including a plurality of additional primary modules, said means enabling the primary module located between the secondary modules to be replaced with a selected one of said plurality of additional

primary modules when the secondary modules are moved into their non-operative positions.

16. A printing unit according to claim 14 or claim 15, wherein the plate cylinders of one primary module are of a different diameter to the plate cylinders of another primary module.

17. A printing unit according to claim 16, comprising a cooperating adjustment mechanism on the primary and secondary modules so that the inking systems adjust to plate cylinders of different diameters when the secondary modules are returned to their operative positions.

18. A printing unit according to any of claims 12 to 17, wherein said means for moving the primary module includes a slide member on the primary module which cooperates with a guide track attached to a supporting base on which the primary module sits in an operative position.

19. A printing unit according to claim 18, wherein said means further includes a transfer bogie which cooperates with the or each primary module to push it along the guide track onto a transfer pallet.

20. A printing unit according to any preceding claim, wherein dampening systems are mounted to each of the secondary units.

21. A method of reconfiguring a printing unit for a web-offset press comprising plate and blanket cylinders arranged in couples to print on both sides of a paper web passing between them, and an inking system associated with each print couple operable to supply ink to the plate cylinder thereof in an operative position, wherein the printing unit comprises a primary module carrying the plate and blanket cylinders and a pair of secondary modules carrying the inking systems, the method including the step of moving at least one of the secondary modules into a non-operative position in which the primary and the or each secondary module are separated from each other.

22. A method according to claim 21, wherein the method includes the step of moving the primary module out from between the secondary modules when the secondary modules have been moved into the non-operative position.

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23. A method according to claim 22, wherein the method includes the step of moving the primary module in a direction substantially at right angles to the direction of movement of the secondary modules between their operative and non-operative positions.

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24. A method according to claim 22 or claim 23, wherein the method includes the step of moving a different primary module stored remote from the secondary modules to between the secondary modules and returning the secondary modules to their operative positions with said different primary module.

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25. A method according to claim 24 wherein the printing unit comprises a plurality of different primary modules stored remote from the secondary modules and the method includes the step of selecting one of said different primary modules and moving said selected primary module to between the secondary modules and 20 returning the secondary modules to their operative positions with said selected primary module.

26. A method according to claims 24 or 25, including the step of replacing the primary module with a primary module carrying plate cylinders of a different 25 diameter to the diameter of the plate cylinders carried by the primary module that is being replaced.

27. A folder for a web-offset printing press comprising an upper folder module including at least one former to impart a first longitudinal fold to a continuous web 30 of printed matter passing over the or each former, a lower folder module to receive the folded web from the upper folder module and comprising means to cut the web into longitudinal sections and impart a second fold to each section substantially at right angles to the first longitudinal fold and, a delivery module comprising means

to receive the folded sections from the lower folder module and deliver them for transportation out of the folder, wherein the lower folder module is discrete and separable from the upper folder module.

5 28. A folder according to claim 27, wherein the lower folder module comprises a frame to which said means are mounted, the frame including cooperating means to releasably attach it to the upper folder module in an operative position.

10 29. A folder according to claims 27 or 28, wherein the lower folder module is a jaw folder and comprises a collect cylinder, a jaw cylinder and a cutting cylinder.

30. A folder according to claims 27 or 28, wherein the lower folder module is a rotary folder module and comprises a folding cylinder, second fold rollers and a cutting cylinder.

15 31. A folder according to claim 30, wherein the diameter of the respective cylinders of each lower folder module are different.

20 32. A folder according to any of claims 27 to 31, wherein the frame includes means to enable the lower folder module to be moved from its operative position to an off-line storage position.

25 33. A folder according to claim 32, wherein said means for moving the lower folder module includes means to enable a different lower folder module to be located in said operative position in place of the lower folder module.

34. A folder according to claim 32 or 33, wherein the folder includes at least two lower folder modules, each module movable between the operative position in the folder and an off-line storage position.

30 35. A folder according to any of claims 27 to 34, wherein the delivery module is discrete and separable from the lower folder module.

36. A folder according to claim 35, wherein the delivery module comprises a frame and cooperating means to releasably attach the frame to the lower folder module in an operative position.

5 37. A folder according to any of claims 27 to 36, wherein the means in the delivery module to receive the folded sections from the lower folder and deliver them for transportation out of the folder comprises a rotatably mounted paddle wheel.

10 38. A folder according to claim 37, wherein the delivery unit further comprises a stripper and a delivery conveyor to receive folded sections from the paddle wheel and transport them from the folder.

15 39. A folder according to claim 37 or 38, wherein the paddle wheel is rotatably driven by its own motor.

20 40. A folder for a web-offset printing press comprising an upper folder module including at least one former to impart a first longitudinal fold to a continuous web of printed matter passing over the or each former, a lower folder module to receive the folded web from the upper folder and comprising means to cut the web into longitudinal sections and impart a second fold to each section substantially at right angles to the first longitudinal fold and, a delivery module comprising means to receive the folded sections from the lower folder module and deliver them for transportation out of the folder, wherein the delivery module is discrete and
25 separable from the lower folder module.

41. A folder according to claim 40, wherein the delivery module comprises a frame and cooperating means to releasably attach the frame to the lower folder module in an operative position.

30 42. A folder according to claim 40 or 41, wherein said means comprises a rotatably mounted paddle wheel.

43. A folder according to claim 42, wherein the delivery module further comprises a stripper and a delivery conveyor to receive folded sections from the paddle wheel and transport them from the folder.

5 44. A folder according to claim 42 or 43, wherein the paddle wheel is rotatably driven by its own motor.

45. A folder according to claim 44, wherein the motor is mounted to the delivery module.

10 46. A method of reconfiguring a folder for a web-offset printing press comprising an upper folder module including at least one former to impart a first longitudinal fold to a continuous web of printed matter passing over the or each former, a discrete lower folder module separable from the upper folder module to receive the folded web from the upper folder module and comprising means to cut the web into longitudinal sections and impart a second fold to each section substantially at right angles to the first longitudinal fold and, a delivery module comprising means to receive the folded sections from the lower folder module and deliver them for transportation out of the folder, wherein method includes the step of separating the lower folder module from the upper folder module and replacing the lower folder module with another lower folder module.

20 47. A printing press including a plurality of printing units according to any of claims 1 to 20.

25 48. A printing press including a folder according to any of claims 27 to 39.

49. A printing press according to claim 47 and to claim 48.

30 50. A method of reconfiguring a printing press comprising a plurality of printing units according to any of claims 1 to 20, using the method steps according to any of claims 27 to 39 on each printing unit of the press.

51. A method according to claim 50, wherein the printing press includes a folder according to any of claims 27 to 39, the method including the additional step of reconfiguring the folder according to claim 46.

5 52. A web-offset printing press comprising a print unit and a folder located adjacent to the print unit together defining a path for a web of paper passing through the press, the print unit comprising means for slitting the web to form a plurality of ribbons and means for turning said ribbons so that each lie in a parallel plane one above the other as they travel towards and into the folder, wherein the
10 press is configured such that said means for turning the ribbons is operable to turn each ribbon the same number of times between the print unit and the folder.

15 53. A press according to claim 52, wherein the press is configured so that the web passing up through the print unit lies in a plane at right angles to the plane occupied by each of the ribbons as they pass down into the folder.

20 54. A press according to claim 52 or 53, wherein the printing unit comprises print and blanket cylinders arranged to rotate about first parallel axes and the folder comprises cylinders arranged to rotate about second parallel axes, the first and second axes being at right angles to each other.

25 55. A web-offset press according to any of claims 52 to 54, comprising a plurality of print units each having means for slitting the web passing through a print unit to form a plurality of ribbons and each having means for turning said ribbons so that the ribbons from each print unit lie in a parallel plane one above the other as they travel towards and into the folder.